IN THE FIGURES:

Please correct Fig. 14 as shown in the attached copy of the Figure. The formal drawings will incorporate the correction when submitted following a Notice of Allowance.

IN THE CLAIMS:

Please cancel claims 1-223 and add new claims 224-253 as follows:

--224. (NEW) In a digital communication system, a method for transmitting via a plurality of inputs to a channel, said method comprising:

providing a time domain substantially orthogonalizing procedure to divide said channel into input bins;

providing one or more spatial directions for communication defined by corresponding weightings among said channel inputs wherein each input bin has at least one associated spatial direction, said weightings defining said one or more spatial directions so that each spatial direction corresponds to communication via more than one channel input; and

transmitting said information in subchannels of said channel by employing at least two independent parallel applications of an inverse of said time domain substantially orthogonalizing procedure, said subchannels being defined by a combination of input bin and spatial direction.

225. (NEW) The method of claim 224 wherein transmitting said information comprises:

providing a group of input symbols wherein each input symbol corresponds to a particular input bin of said time domain substantially orthogonalizing procedure;

applying ones of said weightings corresponding to each of said input bins to each of said input

symbols to develop for each of said input symbols a vector of spatially processed symbols, each

element of said vector corresponding to a single channel input of said plurality of channel inputs;

applying said inverse of said time domain substantially orthogonalizing procedure

independently for each of said channel inputs to said spatially processed symbols; and

transmitting time domain symbols via said channel inputs responsive to results of said inverse

of said time domain substantially orthogonalizing procedure.

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226. (NEW) The method of claim 224 wherein each input bin has at least two associated

spatial directions, said spatial directions being chosen independently for each input bin signal.

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227. (NEW) The method of claim 226 wherein said at least two spatial directions are

mutually orthogonal for each of said input bins.

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228. (NEW) The method of claim 226 wherein transmitting comprises:

providing a group of input symbols wherein each input symbol corresponds to a particular input

bin of said time domain substantially orthogonalizing procedure and a particular one of said at least

two spatial directions;

for each of said spatial directions applying one of said weightings to define contributions to

each of said channel inputs;

for each channel input, independently applying said inverse of said time domain substantially

orthogonalizing procedure to results of applying said weightings; and

transmitting via said channel inputs responsive to results of applying said inverse of said time

domain substantially orthogonalizing procedure.

229. (NEW) The method of claim 228 wherein said weightings are selected according to singular value decompositions of matrices characterizing communication via each input bin of said channel.

230. (NEW) The method of claim 228 further comprising applying a coding procedure to develop said group of input symbols.

231. (NEW) The method of claim 226 wherein said at least two spatial directions are not mutually orthogonal for each of said input bins.

232. (NEW) The method of claim 231 wherein transmitting comprises:

coding said information to develop symbols corresponding to each of said subchannels, said coding being optimized to take advantage of multiple spatial directions;

applying said inverse of said time domain substantially orthogonalizing procedure independently to symbols corresponding to each of said at least two spatial directions;

applying said weightings to results of said independent applications of said inverse of said time domain substantially orthogonalizing procedure; and

transmitting via said channel inputs responsive to results of applying said weightings.

233. (NEW) The method of claim 232 wherein said inverse of said time domain substantially orthogonalizing procedure belongs to one of a group consisting of an inverse Fast Fourier Transform and a Fast Fourier Transform.

234. (NEW) The method of claim 233 wherein said Fast Fourier Transform or said inverse Fast Fourier transform is followed by addition of a cyclic prefix.

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235. (NEW) The method of claim 224 wherein said channel comprises a wireless channel and said plurality of channel inputs are associated with a corresponding plurality of transmitter antenna elements.

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236. (NEW) The method of claim 235 wherein said plurality of transmitter antenna elements are co-located.

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237. (NEW) The method of claim 235 wherein said plurality of transmitter antenna elements are at disparate locations.

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238. (NEW) The method of claim 224 further comprising: allocating bit loading and power among said plurality of subchannels.

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239. (NEW) A transmitter system for transmitting via a plurality of inputs to a channel, said transmitter system comprising:

at least one processing element that applies an inverse of a time domain substantially orthogonalizing procedure to divide said channel into input bins;

a spatial processor employing weightings among said channel inputs to define spatial directions wherein each input bin has at least one associated spatial direction, said weightings defining said one or more spatial directions so that each spatial direction corresponds to communication via more than one channel input; and

wherein said transmitter system transmits information in subchannels of said channel, each of said subchannels being defined by a combination of input bin and spatial direction, by employing said at least one processing element for at least two independent applications of said inverse of said time domain substantially orthogonalizing procedure.

240. (NEW) The transmitter system of claim 239 comprising:

a system input that receives a group of input symbols wherein each input symbol corresponds to a particular input bin of said time domain substantially orthogonalizing procedure; and wherein

said spatial processor applies ones of said weightings corresponding to each of said input bins to each of said input symbols to develop for each of said input symbols a vector of spatially processed symbols, each element of said vector corresponding to a single channel input of said plurality of channel inputs; and wherein

said at least one processing element applies said inverse of said time domain substantially orthogonalizing procedure independently for each of said channel inputs to said spatially processed symbols; and wherein

said transmitter system transmits via said channel inputs responsive to results of said inverse of said time domain substantially orthogonalizing procedure.

241. (NEW) The transmitter system of claim 239 wherein information is transmitted in subchannels defined by said input bins and at least two spatial directions associated with each of said input bins, said spatial directions being chosen independently for each of said input bins.

242. (NEW) The transmitter system of claim 241 wherein said at least two spatial directions are mutually orthogonal for each of said input bins.

243. (NEW) The transmitter system of claim 242 comprising:

a system input that receives a group of input symbols wherein each input symbol corresponds to a particular input bin of said time domain substantially orthogonalizing procedure and a particular one of said at least two spatial directions; and wherein

said spatial processor, for each of said spatial directions, applies one of said weightings to define contributions to each of said channel inputs; and wherein

said at least one processing element independently applies said inverse of said time domain substantially orthogonalizing procedure to results of applying said weightings; and wherein

said transmitter system transmits via said channel inputs responsive to results of applying said inverse of said time domain substantially orthogonalizing procedure.

244. (NEW) The transmitter system of claim 243 wherein said weightings are selected according to singular value decompositions of matrices characterizing communication via each input bin of said channel.

245. (NEW) The transmitter system of claim 243 further comprising an encoding system that applies a coding procedure to develop said group of input symbols.

246. (NEW) The transmitter system of claim 241 wherein said at least two spatial directions are not mutually orthogonal for each of said input bins.

247. (NEW) The transmitter system of claim 246 further comprising:

an encoding system that encodes said information to develop symbols corresponding to each of said subchannels, said coding being optimized to take advantage of multiple spatial directions; and wherein

said at least one processing element applies said inverse of said time domain substantially orthogonalizing procedure independently to symbols corresponding to each of said at least two spatial directions; and wherein